

We claim:

1. A method comprising the steps of:

scanning a plurality of radio frequency channels during a scan interval;

receiving messages on each of the plurality of radio frequency channels during the scan interval;

maintaining a scan table having an entry for each device from which a message is received during the scan interval;

maintaining a channel map having an entry for each of the plurality of radio frequency channels on which a message was received, each entry containing a device ID of a device that sent a message on the corresponding channel;

sorting the channel map into a triplet channel map, wherein each successive group of three entries is associated with three successive channels, wherein the average power is stored in the entry for each channel;

selecting a channel from the triplet channel map, by selecting the channel from the triplet with the lowest center average power;

transmitting Preclaim messages on the selected channel during a preclaim interval;

receiving messages on the selected channel and updating the scan table based on each message received during the preclaim interval;

calculating an adjacency vector sum, the vector sum representing the sum of all average power levels on all channels;

transmitting Claim messages on the selected channel during a claim interval, the Claim messages including the adjacency vector sum;

receiving messages on the selected channel during the claim interval;

maintaining a Claim table having an entry for each device ID that sent a message on the selected channel during the claim interval;

evaluating the claim table at the end of the claim interval, wherein evaluating comprises the steps of:

If the claim table has no entries, causing the apparatus to commence communications with other devices via the selected channel;

If the claim table has entries, then checking to see if the selected channel was occupied at the beginning of the claim interval, and if the selected channel was not occupied at the beginning of the claim interval, causing the apparatus to return to scanning channels during a scan interval;

If the selected channel was occupied at the beginning of the claim interval, checking to see if all the claim table entries contain power levels that are less than a power level that was recorded on the selected channel before the claim interval, and if all the claim table entries contain power levels that are less than the power level that was recorded on the selected channel before the claim interval, then causing the apparatus to commence communications with other devices via the selected channel;

If any claim table entry contains a power level that is greater than the power level that was recorded on the selected channel before the claim interval, then comparing the adjacency vector sum to an adjacency vector that was received in one of the messages, and if the adjacency vector sum is greater than the adjacency vector

received, causing the apparatus to commence communications with other devices via the selected channel, otherwise causing the apparatus to return to scanning channels during a scan interval.

2. The method of claim 1 wherein the step of maintaining a channel map maintains, for each entry, the device ID of a device that sent a message or messages on the channel at the highest average power.

3. The method of claim 2 further comprising the step of ascertaining during the scan interval whether any power level recorded in the channel map exceeds a threshold power level, and if so, the logic causes the apparatus to enter a standby mode.

4. The method of claim 2 further comprising the step of ascertaining during the preclaim interval whether the scan table includes too many entries, and if so, the logic causes the apparatus to enter a standby mode.